

**18. PSYCHOSOCIAL INFLUENCES ON
CIGARETTE SMOKING.**

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Maintenance of Smoking

Many of the psychosocial influences on the establishment of smoking are discussed at length in other chapters of this report. This chapter begins with issues related to the maintenance of cigarette smoking. Much of the research which was reviewed, however, made no strict distinction between factors leading to the establishment and those leading to the maintenance of smoking. For a more far-ranging review than possible in this short space and for a somewhat different approach to the topic, the reader is advised to consult other sources (e.g. 47, 48).

Individual Factors

Personality and Smoking

In part because such research can be among the easiest to conduct, many studies have been undertaken to correlate scores on self-report personality inventories with smoking habits. Much of this research has been marred by too few subjects, inadequate samples, too little attention to other measurable and potent influences on cigarette smoking, such as peer pressure, parental influence, and socioeconomic status, and too little appreciation of the fact that studying the determinants of cigarette smoking is fundamentally a problem for multivariate analysis (see the criticisms in 19, 22, 49, 65, 90).

In general, the personality research shows that even the most reliable personality predictors of cigarette smoking, such as extraversion, account for only about 3 to 5 percent of the variance in measures of smoking habits. Smith (90) concludes that the best univariate personality assessments are able to discriminate smokers from nonsmokers in only about 60 percent of the cases. His own multivariate studies are able to discriminate smokers from nonsmokers in 68 to 76 percent of the cases.

Personality research is intrinsically correlational. It describes associations between variables and does not establish causal connections. Researchers are in a position to manipulate at random (a requirement for true experimental designs) neither the personalities nor the chronic smoking habits of their subjects. To find that smokers are, to use the same example, more extraverted than nonsmokers gives no information about (1) whether smoking caused an increase in extraversion, or extraversion caused an increase in smoking, or (2) whether some unmeasured confounding variables, which are correlated with both smoking and extraversion, are the true cause of the observed association. Longitudinal studies that are able to assess personality before the onset of smoking are some help in dealing with the first problem, but they deal not at all with the second. Even with these limitations in mind, the search for correlations between personality and smoking has yielded some information worthy of consideration.

Wiggins (105) reviews studies which indicate that most of the various measures of temperament can be boiled down to two major factors—extraversion and neuroticism (anxiety).

Extraversion

Since the first major review of this area by Matarazzo and Saslow (54), a cluster of variables often called extraversion has been shown to be positively associated with cigarette smoking. Eysenck's work on extraversion-introversion has had a powerful influence on defining the field (27). According to his research, the typical extravert craves excitement, is willing to take risks, is sociable, likes parties, is carefree and easygoing, and may be aggressive. On the other hand, the introvert is introspective, retiring, bookish, prudent, emotionally-controlled, passive, and reliable. Eysenck considers the extraversion-introversion dimension to be comprised of varying degrees of four major traits: sociability, liveliness, impulsiveness, and jocularity. In a carefully sampled study (28), which also controlled for age and social class in British males, the amount smoked was related directly to greater extraversion.

Cattell's work with his 16PF inventory on a sample of college men and women (14) supports this finding on extraversion. Extraversion emerges as a second-order factor of the 16PF and correlates +.21 with smoking (a three-point scale of smoking habits). The primary factors which correlate most with smoking are Affectothymia (outgoing) ($r = +.16$) and Surgency (happy-go-lucky) ($r = +.29$). Both these factors are major components of the extraversion scores.

Smith (91) reviews the results of 15 reports describing 25 studies that he believes have provided adequate measures of extraversion (e.g., the Maudsley Personality Inventory, MMPI Social Introversion Scale, 16PF: Extraversion, Strong Vocational Interest Blank, and peer ratings of extraversion). Twenty-two of the twenty-four studies that describe statistical analyses showed that smokers were more extraverted than nonsmokers. It was noted that the effect has been found in several different populations (for example, U.S. adult males and females, British adult males, U.S. high school and junior high school males and females). Smith (91) treats impulsiveness as a separate personality category. But perhaps it is best to consider the impulsiveness findings as part of the general trend for smokers to be more extraverted. It has been argued that there are two basic components of extraversion: sociability and impulsiveness. Eysenck (28), for example, demonstrates that neither factor alone contributes inordinately to the association between smoking and extraversion.

More recent research (15, 18, 69) in general supports the association between smoking and extraversion. The Cherry and Kiernan paper (15) is of special interest because it describes the results of a large sample, longitudinal study. Personality scores were obtained on the Maudsley

Personality Inventory at the age of 16 years. (Neuroticism findings will be discussed below.) Smoking habits were measured when subjects were 25 years old. The total usable sample was 2,753 British males and females. Both male and female smokers were more extraverted than male and female nonsmokers ($p < .01$). An analysis of recruitment to smoking in those who had not been regular smokers by their 17th birthday showed that extraversion, neuroticism, and being male were each independently and positively associated with becoming a smoker. (There was an indication of interaction between the neuroticism and extraversion effects; those high in both were less likely to be smokers than would have been predicted.)

Russell (73) proposes that the following findings cluster with a degree of extraversion—that smokers are greater risk-takers, more impulsive, more prone to divorce and job changing, more interested in sex, and more likely to drink tea, coffee and alcohol.

Eysenck (26) has offered a biologically based theory as to why smoking should be more rewarding to extraverts than to introverts. Little additional social-psychological research has been done on how being extraverted might lead one to start or maintain smoking or on how being introverted might lead to not smoking. Likely hypotheses are easy to formulate. Since peer and parental pressures can be powerful influences on recruitment to smoking, it is interesting to note that extraverts are known to be more susceptible to social influence. Perhaps introverts are as resistant to social pressures to smoke as extraverts are prey to them. No research has been performed which attempts to hold these powerful social pressures constant to see the "purer" influence of extraversion on smoking. For example, the association between onset of smoking and extraversion may be moderated by some critical social variable. Future research should consider testing specific hypotheses about how extraversion and smoking could be related causally.

Neuroticism

Smith's review (91) uses the label "mental health" to loosely unite research that has gone under the more specialized labels of "neuroticism," "nervousness," "psychosomatic distress," "adjustment," "emotionality," and "anxiety." Just over half of the 50 or so studies in his review show smokers to have slightly poorer mental health than nonsmokers; the remaining studies show no relationship between smoking and neuroticism. The diversity of measures used and the lack of precise, consistent conceptualizations in this area may be responsible for much of the inconsistency. And it should be emphasized that the positive findings can in no way be interpreted to support the notion that smokers are substantially more neurotic, psychotic, or "crazy" than nonsmokers. At best, the data show a modest relationship

between neuroticism and smoking, accounting for 1 or 2 percent of the variance.

Matarazzo and Saslow (54) report that for the most part smokers have higher neuroticism scores. The first Surgeon General's Report on Smoking and Health (98) concluded tentatively that smoking and neuroticism were probably related. Eysenck (27, 28) has found no evidence that smokers are more neurotic in large representative samples of British adult males.

Two careful studies suggest that there may be sex differences in the relationship between smoking and neuroticism. Waters (101), in a random sample of 2,000 electors in Great Britain, was able to get completed questionnaires from 773 men and 945 women. For men, the correlation between smoking habits and neuroticism was essentially zero (Spearman's rank-order correlation coefficient between neurotic score and amount smoked was $-.002$); for women, the correlation was small, but statistically significant ($r = .127, p < .001$). Clausen (17), as part of the Oakland Growth Study, reports scores on psychoneurotic symptoms for boys and girls who would later grow up to be smokers. Males show a generally negative relationship between amount smoked during adulthood and their adolescent neuroticism scores; females show a generally positive association between smoking and neuroticism.

One other major British survey study, using a short form of the Maudsley Personality Inventory, finds no significant trend for neuroticism to increase among smokers as the amount smoked increased, but does find some indication that such a trend was present for women (15); when a simple nonsmoker-smoker classification was used, neuroticism was higher in both male and female respondents. In Indian males, who smoked either 0, 1 to 10, 11 to 20, or over 21 cigarettes per day, neuroticism decreased as smoking increased. Both linear and cubic trend were significant statistically (43).

In a detailed study on smoking and habits of nervous tension, Thomas (96) surveyed male medical students at Johns Hopkins University (437 nonsmokers, 144 ex-smokers, 251 continuing cigarette smokers) and found an anxiety scale significantly related to greater smoking in a stepwise discriminant function analysis.

At present, the most reasonable conclusion concerning smoking and neuroticism is that there are systematic relationships between them. Researchers do not yet understand, however, the interacting variables or moderating influences on the relationship. It is interesting to note here that Lebovits, et al. (50) evaluated the effects of defensiveness, age, education, and smoking habits on the MMPI scores of 1,572 white males, aged 40 to 56; they looked for statistical interactions which influenced the scores and found indications of some small interactive effects. More research along these lines might reveal the boundary

conditions that influence the relationship between neuroticism and smoking.

Some authorities, e.g., Russell (73), have proposed that slight neuroticism may be the result of being a dependent cigarette smoker rather than a cause of smoking; cigarette withdrawal syndromes may result in greater neuroticism. More careful evaluation of the characteristics of the individual's smoking habit—in particular, whether or not he or she is an *addicted* smoker—may help answer this question.

Antisocial Tendencies

Smith (91) considered 19 reports; 20 of 32 analyses showed that smokers had greater antisocial tendencies (belligerence, psychopathic deviance, misconduct, rebelliousness, defiance, and disagreeableness). Subsequent studies have supported this relationship (49, 62, 69).

Matarazzo and Saslow (54) and Weatherley (102) consider that smokers' greater antisocial tendencies may be due to a response bias. Perhaps smokers are more willing than nonsmokers to admit negative characteristics about themselves (25, 84), even though in actuality they may not differ from nonsmokers in these characteristics. Smith argues that ratings by peers support the belief that smokers have greater antisocial tendencies and that, therefore, the response bias explanation is not very persuasive.

Internal-External Control

At the time of Smith's review (90), there had been only five tests of the relationship between smoking and internal-external control. Internally-controlled individuals tend to believe that they are the masters of what happens to them; their effort and skills (intrinsic properties) will bring them rewards. Externally-controlled individuals tend to believe that fate, luck, or, in general, things beyond their control will bring them their rewards. Four out of five analyses showed smokers to be more externally controlled. (The disconfirming analysis revealed a probability level of about .06, rather than the standard $p < .05$.) Two more recent studies (5, 36) are divided in their support of the hypothesis that smokers are more externally controlled.

Miscellaneous Personality Variables

Orality has not been demonstrated conclusively to be related to more smoking (91). In addition, the concept of orality and its measurement are far from clear-cut. Some of the questionnaires intended to measure orality have depended on questions on beer drinking, coffee drinking, and medicine taking; hence, other drug use behaviors are being defined as "oral behaviors" (40).

The Edwards Personal Preference Schedule (EPPS) has shown some fairly consistent smoker-nonsmoker differences. Smokers tend to be

higher in “heterosexuality” and lower in “deference” and “order” (89, 90).

Personality and Attitudes Toward Drug Taking

Stokes (94) has argued that traditional personality constructs are likely to be inadequate to the task of finding strong predictors of drug use and that personality-attitude measures should be more tailored to the issues of drug use. Six personality factors were tested: fear of personal reaction to drugs; dissatisfaction and a desire to change oneself; respect for the illegality of psychedelic drug use; sensual hedonism; philosophical hedonism; and general tendency to try drugs. The two most important predictors of tobacco use were “general tendency to use drugs” ($r(735) = .29, p < .001$) and “fear of personal reaction to drugs” ($r = .26, p < .001$). In a multiple regression analysis, the multiple R of the six factors with tobacco use was .349, accounting for 12 percent of the variance. It should be kept in mind, however, that as questionnaires themselves become more targeted on drug use and less on general personality structure, the nature of the research is altered.

Smoking Typologies

The most common strategy for discovering why people smoke has been simply to ask them on a questionnaire to indicate their agreement with statements on reasons for smoking (e.g., “I smoke cigarettes to stimulate me, to perk myself up”) or on occasions for smoking (e.g., “I like to smoke when at a party”). Ikard, et al. (38)—employing a theoretical analysis by Tomkins (97)—factor-analyzed responses to proposed reasons for smoking. This analysis revealed six factors: Habitual (e.g., “I smoke cigarettes automatically without being aware of it”), Addictive (e.g., “Between cigarettes I get a craving that *only* a cigarette will satisfy”), Reduction of Negative Affect (e.g., “When I feel ‘blue’ or want to take my mind off cares and worries, I smoke cigarettes”), Pleasurable Relaxation (e.g., “Smoking cigarettes is pleasant and relaxing”), Stimulation (e.g., “I smoke cigarettes to give me a ‘lift’ ”), and Sensorimotor Manipulation (e.g., “Part of the enjoyment of smoking ... comes from the steps I take to light up”). For both men and women, moderate correlations were found between average number of cigarettes smoked per day and the Habitual, Addictive, and Negative Affect Reduction factor scores. Although second-order factors are not reported, inspection of the intercorrelation matrix for the scores on the six types of smoking discloses correlations ranging from .38 and .58 among the Habitual, Addictive, and Negative Affect Reduction scales.

McKennell (58) replicated his earlier work and the work of Horn and his associates. In both cases, the factor structures were remarkably stable. The only revision warranted was the addition of an eighth

factor to his own system—Reluctant Smoking. Reluctant Smoking was seen as similar to Horn's Habitual Smoking. In comparing the models, McKennell found that Horn's Pleasurable Relaxation was not measuring the same thing as was his own Relaxation Smoking. The Horn factor concerns smokers' general attitude toward smoking, that is, how pleasurable it is to smoke, while the McKennell factor concerns the desire to smoke in relaxed situations. The respective factors, Reduction of Negative Affect and Nervous Irritation Smoking, were found to be equivalent. McKennell concluded that it is possible to integrate the two models into a six-factors scheme. The first three factors load on a dimension of Inner Need (Inner Need/Relaxation, Inner Need/Stimulation, and Habit), the next two factors are concerned more with the sensorimotor and social aspects of smoking. The last and most tentative factor derives from Horn's Pleasurable Relaxation factor.

McKennell (58) used cluster analysis to determine if scores on these six integrated factors could be used to classify a random sample of 2,000 British respondents into distinct smoking types.

Six types were found(58, p. 10):

1. *Low Need-Pleasure* smokers, accounting for 14 percent of all smokers, tend more than others to be light smokers, with nonmanual occupations, who go to church, whose friends do not smoke, and who would not find it difficult to stop smoking.
2. *Medium Need* smokers, accounting for 30 percent of all smokers, differ from Low Need-Pleasure smokers chiefly in having a much more favourable attitude to smoking. Otherwise they are similar, although a little nearer the average in amount smoked.
3. *Medium Need/Handling-Social Confidence* smokers are a small group, comprising only 5 percent of all smokers. Apart from their motives for smoking, their most distinctive trait is their above-average frequency of drinking beer.
4. *Medium Need/Reluctant* smokers account for 28 percent of all smokers. They tend to disapprove of smoking but to be unable to escape from dependence on it. They tend to be young.
5. *High Need* smokers, who account for only 8 percent of all smokers, are distinct from High Need-Social smokers in scoring lower on the Handling and Social factors. In other respects they are similar.
6. *High Need-Social* smokers account for 15 percent of all smokers. They tend to smoke heavily, to have a manual occupation, to have friends who smoke, and to find it very difficult to stop smoking.

Coan (18) factor-analyzed an expanded version of the Horn scale and arrived at a classification scheme that is, in the main, compatible with the integration proposed by McKennell. Russell, et al. (76) compared the Horn and McKennell typologies, added new questions to their self-report inventories, and attempted to develop a typology that was more informed by recent developments in the psychopharmacology and

social psychology of cigarette smoking. Six oblique factors were obtained: Psychosocial Smoking, Indulgent Smoking, Sensorimotor Smoking, Stimulation Smoking, Addictive Smoking, and Automatic Smoking. One of the most provocative findings of this analysis was that Horn's Negative Affect Reduction factor did not appear on its own, but was split between the Addictive and Stimulation factors. What McKennell had been describing as a second-order "inner need" factor is here called Pharmacological Addiction and is comprised of the stimulation, automatic, and addictive factors. (The correlations among these factors ranged from .50 to .63). Scores on these three factors were able to discriminate the primary sample of 175 cigarette smokers from a second group of 103 addicted heavy smokers who were attending smoking treatment clinics. The authors propose that the single dimension of pharmacological addiction to nicotine may prove more important for significant classifications of cigarette smokers than would profiles based on the six types of smoking. Perhaps cluster analyses as in McKennell (58) would help answer this question.

Smoking typologies based on what smokers can tell us about their reasons and occasions for smoking are, until proven otherwise, of limited value. It is unclear what insights these verbal reports give us into smoking behavior. Recent work in psychology questions seriously the validity of any self-reports of motivation (64). It is also clear that processes at work well beneath the level of awareness can influence cigarette consumption (83, 84). A recent somewhat preliminary laboratory study indicates that there may be little behavioral validity to the self-reports about reasons for smoking; the classification of smokers into Positive Affect, Negative Affect, and Social Stimulation smokers did not relate to actual smoking behavior in various experimental conditions designed to elicit these types of smoking (2). Other research (51) suggests tentatively that verbal reports of reasons for smoking are more accurate for factors related to external cues (e.g., Pleasure-Taste and Habit) and less accurate for reports of internally defined states (Addiction).

Russell's (74) model of smoking proposes a progression from smoking for nonpharmacological rewards (that is, psychosocial and sensorimotor) to smoking to gain a positive effect from nicotine (indulgent, sedative, stimulation smoking). Finally, an addiction to nicotine develops and avoidance of the ill effects of nicotine withdrawal becomes an additional reinforcer of smoking.

It should be noted that Schwartz (87), using cluster analysis, detected 10 smoker types based on socioeconomic status, alcohol consumption-smoking environment, confidence-security adjustment, illness-anxiety, and attitudes toward smoking-beliefs about dangers. However, this result is not reported in enough detail so that it can be commented on at length.

The development of valid classification schemes for types of cigarette smoking could be a great boon to research on psychosocial influences on smoking. Perhaps, for example, the personality structure of addicted smokers is different from that of social smokers. Coan has conducted an interesting study which pursues this idea (18). Some greater standardization of behavioral classification of smoking habits is also advised. Clearly, a simple division of subjects into the categories of smoker versus nonsmoker is no longer excusable (17). Number of cigarettes smoked per day, number of months or years having been a smoker, nicotine content of preferred brands, and information about inhaling should be determined. (Eysenck (28) found that inhalers had a higher degree of neuroticism than those smokers who did not inhale.)

Self-reports of number of cigarettes consumed present their own problems of interpretation. First, there are strong pressures for the respondents to round-off their answers by saying "half a pack," "a pack," "pack and a half" and so on. Schachter has argued that, depending on the cut-off points that researchers use to establish their smoking categories, it is possible to arrive at some mistaken conclusions about the correlates of amount smoked (82). Using numbers of cigarettes smoked as the main indication of heavy or addicted smoking has had only modest success (35, 38, 58, 76). Another simple question promises to provide a surer link between addicted smoking and self-reports of the smoking habit—the time of the first cigarette in the morning. Kozlowski (45) and Schachter (81) have begun exploring the usefulness of this variable as a way of identifying addicted cigarette smokers.

The category of nonsmoker is also in need of refinement (49). Little attention has been given to developing a systematic typology for nonsmokers, although self-reported reasons for not smoking have been compiled. A typology of nonsmokers may prove useful and may help guide researchers to particular subsamples of nonsmokers in order to evaluate specific hypotheses. For example, some nonsmokers have never even tried a single cigarette and, hence, their own positive or negative biological responses to smoking cannot influence their recruitment to smoking; psychosocial factors in such cases might be said to have precluded the involvement of biological influences on becoming a smoker (46). These biologically-uncontaminated "never smokers" are ideal subjects for studies on psychosocial influences on smoking/not smoking.

Multiple Drug Use

One of the most reliable correlates of cigarette smoking is the use of other drugs. Smokers consume more coffee (caffeine), more alcohol, more psychotropic drugs, more marijuana, and more aspirin than do nonsmokers (1). The correlations between the various drug uses can be difficult to interpret. Consider the conditional probabilities of drug use

in a large sample of U.S. college students in 1969-70 (33). If a student used tobacco, the probability was .97 that the student had used alcohol; if alcohol, the probability of tobacco use was .62. If marijuana was used, the probability of tobacco use was .77; if tobacco, the probability of marijuana was .44. With such figures in mind, it becomes foolhardy to ignore possible multiple drug effects when studying any one drug.

The psychosocial pressures for adolescents to use one drug are similar to the pressures to use others (31). Kandel (41), in a large-sample study of adolescents in New York State, found that peer pressures had consistent and strong effects on drug use (marijuana, tobacco, alcohol, barbiturates, tranquilizers, and stimulants). Significant patterns of intrafamilial multiple drug use have been noted (3). Further, in a large longitudinal study (42), Kandel found systematic patterns of paths from one drug use to another. For example, though most respondents started with beer or wine, some went on to cigarettes next, while some went on to hard liquor. From either branch, liquor or cigarettes, some individuals went on to marijuana, while some persons became both liquor drinkers and cigarette smokers before trying marijuana. The conclusions of this study have important methodological implications:

Whereas most studies compare youths within a total population on the basis of their use or non-use of a particular substance, my results suggest a different strategy. Since each style represents a cumulative pattern of drug use and generally contains fewer adolescents than the preceding stage or stages in the sequence, comparisons must be made among members of the restricted group of respondents who have already used the drug or drugs at the preceding stages, and those who have not. Unless this is done, the attributes identified as apparent characteristics of a particular class of drug users may actually reflect characteristics important for involvement in drugs at the preceding level (p. 914).

Kandel's suggestion demands large-sample research, and the larger the number of drugs of interest (for example, caffeine should probably be added), the larger the samples will have to be.

The methodological significance of the multiple drug use patterns has been clear to epidemiological researchers for years, particularly with respect to smoking (105). For example, it has been argued that the apparent association between coffee drinking and heart disease is actually due to an often unmeasured, but nonetheless confounding, correlation between smoking and heart disease (smoking and coffee drinking are positively correlated) (21). This interest in the confounding or interactive effects of multiple drug use has been slow to influence behavioral, physiological, or personality studies of cigarette smoking. The methodological implications are clear.

Consider, for example, a laboratory study in which subjects are asked to abstain from cigarettes for an hour before coming to the experiment. Since cigarette smokers are more likely to be coffee drinkers or alcohol drinkers, they are more likely to come to the study with significant doses of caffeine or alcohol in their systems. Without knowing it, the experimenter may be looking at the correlated effects of other drugs on the behaviors of interest. If the researchers deprive all subjects of caffeine well before the start of the study, they would not necessarily solve this problem, but rather they may unwittingly find themselves looking at the differential effects of caffeine withdrawal on their measures (44, 45). The effects of confounding drug use even on the filling out of personality inventories are not at all understood.

Social Factors

Family and Peer Pressures

Many of the social factors that are involved in the establishment of smoking are important for the maintenance of the habit. As the young adult begins to leave the direct sphere of influence of the family, presumably the effects of parental and sibling smoking habits (7, 8, 66, 71) would weaken; there is no reason to expect, however, that peer pressures to smoke (66, 71) will be any less strong during the early years of the individual's career as a smoker. The adult smoker is likely to have many smoking friends (57). Probably the most important family structure influence on the maintenance of cigarette smoking derives from the smoking habits of spouses or cohabitants (59, 95). A major survey by the American Cancer Society shows that 68 percent of young women smokers have boyfriends or husbands who smoke, compared with only 41 percent of the nonsmokers (16). The increasing militancy of nonsmokers and the increasing restriction on public opportunities to smoke (99) may be acting to tighten the ranks of cigarette smokers, making the support of a group of smoking friends all the more important to the maintenance of the habit. To our knowledge, no data have been gathered as yet on this point. Brecher and his associates (10) have proposed that the illusion that quitting is easy or the illusion that cigarettes are not dependence-producing helps the smoker to maintain the habit in the early years. Indeed, if one believes that cigarettes' damaging effects to health occur only after a long history of smoking and if, at the same time, one believes that he or she will be only a short-term smoker, the health consequences of smoking are, in effect, tabled as a reason for not smoking. Research reported by Green (32) isolates what is called a "rationalization factor" which is consistent with the preceding interpretation of what many young smokers believe about their smoking.

Some smokers do feel that there is room for doubt concerning the link between smoking and health. Such beliefs do at least give "rational" support to the maintenance of smoking.

Smokers do seem to gain some benefits from smoking. For example, the smoking typologies, discussed above, which are based on self-reports of why smokers smoke, indicate a range of perceived benefits from smoking. Green (32) describes the results of administering tests of the Horn typology to a large sample of smokers in the United States: the Pleasurable Relaxation, Tension Reduction and Craving factors were the most important reasons overall, and the Habit, Stimulation, and Handling factors were of substantial but lesser significance. If smoking can be used to relax or to stimulate the smoker (63, 80), it may genuinely contribute to successful performance in a variety of settings. Mausner (55) has discussed some particularly social gains from smoking, arguing that smoking is part of a complex social ritual and that it can be an important expressive behavior which helps to define the individual's self-concept.

Social Class and Social Mobility

In our culture, socioeconomic status, at least as measured by occupation, has had a stable relationship to cigarette smoking (86). White-collar workers (professional, technical) have the lowest smoking rates; blue-collar workers (laborers, craftsmen) have the highest smoking rates. Men show this relationship strongly, but women tend to show an opposite relationship. Employed white-collar female workers have a higher incidence of smoking than do the blue-collar female workers.

As Reeder (68) has pointed out, two excellent longitudinal studies have shown a relationship between social mobility and smoking behavior. Clausen (17) reports that upwardly mobile (relative to parents' SES) men were less likely to smoke; downwardly mobile men were more likely to be heavy smokers. Similarly, Srole and Fischer (93) report that for males upward mobility decreases the incidence of smoking, while downward mobility increases the incidence of smoking; the results for females do not show the same pattern and are difficult to interpret.

Sex Roles

One of the most striking findings to have emerged from basic surveys on the incidence of smoking in teenagers is the increase over the past 20 years in smoking among girls. No corresponding increase has been found among teenage boys. The latest survey in this series (1975) shows that teenage girls now equal boys, 20 to 21 percent, respectively, in the incidence of cigarette smoking (68). Reeder proposes that correlated changes in the sex role of women, as manifest in changes in

college attendance and in labor trends, may be responsible. For more discussion of these issues, see the Public Health Service report on cigarette smoking among teenagers and young women (60) and the report by Bosse and Rose (9).

Cessation of Smoking

Individual Factors

Two basic types of research are relevant to personality influences on stopping smoking. The first type concerns studies which have measured the personality characteristics of those who have become ex-smokers, with no particular regard to how they became ex-smokers. The second type deals with the personality correlates of success in specific smoking treatment programs.

Personality Characteristics of Ex-Smokers

Eysenck's research on British males (28) showed that ex-smokers were equal in extraversion to nonsmokers and to light smokers, but lower in this trait than were medium or heavy smokers; neuroticism was unrelated to smoking habits. In a longitudinal study of British men and women, Cherry and Kiernan (15) found that low daily cigarette consumption and high extraversion scores were each independently related to a greater incidence of giving up smoking. These relationships held for both men and women. Neuroticism had no relationship to smoking cessation in women, but for men, the more neurotic were less likely to give up smoking. A model was derived which has very impressive predictive powers. For men, neuroticism and extraversion scores were each divided into high and low categories and daily cigarette intake at age 20 was divided into three categories (1-10, 11-20, 21+). It was predicted that 47 percent of the high extraversion-low neuroticism-low consumption individuals would stop smoking, and 50 percent, in fact, did. Only 2 percent of the low extraversion-high neuroticism-high consumption individuals were predicted to give up cigarettes; none did. This study demonstrates the advantage to be gained from considering sex differences and from looking at more than one personality variable at a time.

In a small sample study (N=182) of college undergraduates, the Edwards Personal Preference Schedule (EPPS) showed that former smokers (N=22) expressed aggression more openly than either nonsmokers or smokers who never tried to stop; that they had a stronger need for achievement than any other group, including smokers who had tried to stop but failed; that they had a weaker need for close ties with peers (affiliation); and that they had more behavioral stability than the other groups (101). It should be noted, however, that this study failed to replicate EPPS differences that have been found for smokers versus nonsmokers.

Internal-External Locus of Control

It is not surprising that this dimension has made its way into several studies on this topic. "Internals" should believe in their own willpower and ability, while "Externals" should be much more fatalistic in outlook. One might therefore predict that Internals would be more successful than Externals in the efforts to quit smoking. Straits (95) and Foss (30) confirmed this prediction; Lichtenstein and Keutzer (53) and Burton (12) failed to confirm it. A third study showed only complicated interactions between type of treatment technique, Internal-External scores, and success at abstinence (6).

Extraversion and Neuroticism

Using general definitions of these two traits, it is possible to see a fairly consistent pattern of results which suggests that neuroticism and, in a more complicated way, extraversion are associated with ability to abstain from smoking. In a longitudinal study of Harvard males, McArthur, et al. (56) found slight indications that the heavier smokers who were able to give up cigarettes were best described as sociable and as having strong basic personalities, in other words, high in extraversion and low in neuroticism. Guilford (34) found that male quitters were less neurotic than those who were unsuccessful at quitting; this trend was not found in female smokers. In addition, male quitters were more sociable (an extraversion factor); this trend, too, was not found in women. Straits (95) found no relationship between extraversion and neuroticism, as measured by Eysenck's scales, and quitting. On the Cattell 16PF questionnaire, male quitters were less tense (that is, low in neuroticism) and had more "critical" and "independent" minds (perhaps this can be seen as more internal locus of control); female quitters had lower "tension" and "apprehension" scores (that is, low neuroticism) (70). Jacobs (39) found that successfully abstaining males were less "impulsive, defiant and manifestly distressed" and also were less "constricted, guarded and isolated." These two sets of traits were positively correlated with each other ($r(102) = .24, p < .05$); it is not obvious how an "impulsive, defiant" person could at the same time be "constricted" and "guarded." Perhaps the last two components, "manifestly distressed" and "isolated", account for the greatest share of the variance in this association. In a 5-year follow-up of a smoking withdrawal clinic (103), neuroticism as measured by an emotional status score and by a psychosomatic symptom score was related to quitting smoking; successful abstainers were less neurotic. Ryan (77), using the 16PF, found that the upper class male quitters were less neurotic and more extraverted; the lower class males did not show the same pattern, but the sample size of quitters here was very small ($N = 11$).

Self-Reported Reasons for Stopping

Four main reasons for quitting were identified by Green (32) in an analysis of data that had been gathered along with the large survey of adults carried out by the National Clearinghouse for Smoking and Health in 1975 (51). Health concerns, of course, weighed heavily as a reason for stopping. There was a desire to gain mastery of the habit which had been controlling their lives. Some smokers had come to believe that smoking was a messy, filthy, smelly habit and, therefore, aesthetic reasons had become prominent. Some smokers said that they were trying to quit because they felt that their smoking was setting a bad example for others who were under their influence, such as children or friends. Green tried to find out if economic concerns (the cost of cigarettes) were a major reason for stopping, but there was little evidence to support such a claim in this study. Perhaps more substantial increases in cigarette cost would have larger effects on attempts at cessation. Horn (37) and Russell (72) have argued that economic factors can have a major influence. Certainly among younger smokers the cost of smoking is a reason that is often given for wanting to stop (78, 79). Young ex-smokers in grades 7 to 12 gave the following reasons for not smoking, beginning with the most common: (1) no enjoyment of or a dislike of cigarettes, (2) health, (3) the influence of others, e.g., a doctor or a friend, (4) aesthetic or moral objections to smoking, (5) the cost of smoking, and (6) the desire to have athletic abilities unimpaired (this was a more important reason among males than females) (79).

Green (32) speculates that the increasing social pressures against smoking may be creating some new reasons for not smoking. For example, smokers are being made to feel more and more that their smoking is an unwelcome nuisance to other people, and this may motivate some smokers to try to give up cigarettes.

Horn (37) emphasizes four aspects of the perception of the health threats of smoking that may be crucial to the decision to try to stop smoking: (1) becoming aware of the threat, (2) accepting that the threat is important, (3) accepting that the threat is personally relevant, and (4) becoming aware that something can be done about the threat. Eisinger (23) has found that, of those reporting an acquaintance whose health has been affected by smoking, 27.1 percent quit smoking; only 9.7 percent of those reporting no such acquaintance quit smoking.

Many smokers come to realize that they are dependent on cigarettes; this realization can lead to low motivation to try to quit smoking (75). Mausner (55) has studied the reasons that successful and unsuccessful abstainers give for stopping smoking. He concludes that, in general, people decide to stop because of an increased expectation of the benefits derived from stopping, rather than because of the fear of the consequences of continuing to smoke. Most smokers believe that smoking is bad. The people who continue to smoke tend to find not

smoking more aversive than the prospect of continuing to smoke; those who stop tend to be able to convince themselves that not smoking would be worth the effort (55).

Multiple Drug Use

Unsuccessful abstainers from cigarettes, relative to quitters, are likely to be heavier users of other drugs, especially alcohol and caffeine (34, 56, 96). Little attention has been given to the special problems of people trying to abstain from more than one drug at once or to the possibilities of a user substituting for the absence of one drug by increasing the consumption of another (45). Thomas (96) analyzed correlates of quitting in light (less than 20 cigarettes per day) and heavy smokers (20 or more per day), and proposed that the greater alcohol and coffee consumption of the heavy smokers—along with higher anger and anxiety scores—made smoking cessation a more difficult feat for them to accomplish. There are some indications of sex differences in the relationship between alcohol intake and successful smoking cessation: among males, heavier drinkers were less likely to quit (34, 93); among females, heavier drinkers were more likely to quit (93), or no significant relationship between drinking and smoking cessation was found (34).

Social Factors

Social Class

The data on the effects of social class or socioeconomic status on quitting smoking are full of conflict. Eisinger (23) in a large sample study found no relationship between education level and smoking cessation. Ryan (77) found that among nonstudent males under age 60 (N = 206) in Greenfield, Iowa, successful abstention was much more common in those scored as being in the upper class. In the Midtown Manhattan study (93), for men, socioeconomic status was unrelated to becoming an ex-smoker; for women, there was some indication that lower class smokers were less likely to quit (no statistical tests are reported for this), but the authors assert that the sexes are “quite similar on all three SES levels in their smoking to non-smoking conversion percentages.” Meyer, et al. (59) conclude from a study of approximately 200 individuals in the New York City area that blue-collar workers had less difficulty in quitting than did white-collar workers. An interesting theory was proposed to account for this finding: a member of the blue-collar group was felt to experience less pressure against becoming a smoker than was a white-collar group member; hence, white-collar workers constitute a specially selected group of high-need smokers for whom smoking, from the start, was important enough to maintain in spite of greater interpersonal pressures not to smoke. Unfortunately, this theory may be trying to

account for a phenomenon (white-collar smokers have a harder time quitting) that is far from reliable, as witnessed by the preceding review.

Family and Peer Pressures

The weight of evidence indicates that a smoker who has a spouse who smokes will be less likely to be a successful abstainer (59, 88, 95, 103). West, et al. (103) found that the smoking habits of the smoker's friends, work associates, siblings, mother or father were unrelated to being able to quit. Schwartz and Dubitzky (88) indicate that smoking friends can make a smoker less likely to be able to quit. Caplan, et al. (13) have described individual differences in a smoker's dependence on social support, not specifically related to smoking; smokers with low work loads and low social support were much more likely to be able to quit than were those with high work loads or with high social support. Smokers with Type A personality (hard-driving, persistent, competitive, involved in work, overloaded with work) were more likely to be unable to quit than those with Type B personality (having opposite characteristics to the Type A). This report is recommended highly for the appropriateness of its use of multivariate techniques to deal with complicated confounding influences on abstention. Eisinger (24) found that the "number of former smokers among their 20 best known friends" was directly related to successful abstention.

Sex Roles

Successful abstainers are more likely to be males than females; Eisinger reports 70.4 versus 29.6 percent (24). The smaller percentage of females who are able to quit smoking is one of the most reliable findings in the literature (23, 24, 34, 103). Bosse and Rose (9), using a national probability sample (N=5,704), tested the hypothesis that the growing convergence of male and female sex roles would lead to a decrease in the difference in male and female rates of smoking cessation. They found that younger male and female smokers were showing equivalent abstention rates; they described this effect as "the equalitarian shift." They found, then, that both age and sex were related to successful quitting, and, in addition, that "knowing someone whose health had been affected by smoking and who had quit" had an even greater effect on quitting.

Profiles of Successful Abstainers

In a cluster analysis performed on 252 male subjects attending a treatment clinic, Schwartz and Dubitzky (88) isolated 5 important factors (clusters) that combined to yield 12 types of subject. The first cluster concerned personal adjustment in work, achievement, sex, and social situations. The second cluster combined chronic illness and

anxiety along with recent respiratory ailments and use of psychiatric care. Cluster 3 was labeled perception of smoking; low scores here indicated belief in the health dangers of smoking. The fourth cluster was an equivalent to the chronic, habitual, addictive smoking syndrome described by Tomkins (97). The fifth cluster combined the Tomkins concepts of negative and positive affect smoking with positive attitudes toward smoking. For a detailed discussion of the 12 types, consult Schwartz and Dubitzky (88). These types were determined without regard to success in smoking withdrawal. When success in withdrawal is considered, the types can be reduced to more general groups of successful abstainers. Four of the types contained 60 percent of the continuing successes and only 20 percent of the failures. All these types had good adjustment, low chronic illness and anxiety, and low chronic, habitual, addictive smoking scores. Three of the types contained a significantly lower incidence of treatment successes. These types were distinguished either by very high chronic illness and anxiety or were high in chronic, habitual, addictive smoking. This latter finding underscores the need for more research on the dependence processes associated with cigarette smoking.

Two other factors were shown to discriminate successful individuals from recidivists. Those subjects who had friends or a wife who smoked were less likely to succeed, and those who had lower socioeconomic status were less likely to abstain. Based on earlier sections of this review, the first factor is more likely to be a significant influence on abstinence than is the second.

Straits' (95) discriminant function analysis generally confirms the pattern found by Schwartz and Dubitzky. The roles of personal adjustment and chronic illness and anxiety in smoking cessation are generally supported by the earlier sections of the present review.

One final point needs to be made. There is mounting evidence, especially in some large sample studies like that of West and associates (103), that measures of cigarette dependence (for example, number of cigarettes smoked per day) are directly and often markedly related to increased inability to quit smoking (15, 23, 39, 89, 103).

Some General Psychosocial Influences On Smoking

Mass Media and Smoking

There is little persuasive empirical research available on the effects of television advertising, or its ban, on cigarette sales or on recruitment to the ranks of smoking. Bans on television advertising for cigarettes in several countries, including the United Kingdom, Denmark, Ireland, New Zealand, and Italy, seem to have had almost no effect on per capita cigarette consumption (52). A highly technical, econometric analysis has estimated that the 1965 ban on television advertising in the United Kingdom produced a statistically insignificant fall of 3

percent in cigarette consumption (67). In Communist countries, smoking is prevalent without advertising of any sort to support it. Four years after the 1970 ban on television advertising in the United States, there was little indication that this mass medium had a major influence on cigarette consumption (104). An econometric analysis by Warner (100) in 1977 suggested, however, that the sustained antismoking activities, including mass media, that have been conducted since 1964 may have prevented consumption of tobacco from rising even further than it already has.

Whiteside (104) has presented an interesting, though speculative, analysis of media influences on smoking. From 1922 to 1952 in the United States, cigarette sales increased 639 percent; over the same period, the population grew only 54 percent. Cigarette advertising, he argues, had a large effect on building the cigarette market. More recently, however, the cigarette market has been in a relatively mature, stable state and has had a much lower rate of growth. As the cigarette industry has asserted, the major action of cigarette advertising now seems to be to shift brand preferences, to alter market shares for a particular brand. Whiteside notes that, when television advertising was banned, the cigarette industry increased its use of direct marketing techniques, such as displays and promotions at the point of sale. This rechanneling of advertising makes it difficult to evaluate the independent effect of the television ban on cigarette sales.

Foote (29) proposes that the downturn in per capita cigarette sales in the United States from mid-1967 to 1970 was the result of the increase in antismoking ads on television. The Federal Communications Commission applied its so-called Fairness Doctrine to cigarette commercials in 1967, thereby requiring broadcasters to provide free time for the presentation of antismoking advertising. The application of the Fairness Doctrine led in 1970 to about \$60 million of free television air time being provided to antismoking campaigns. After the ban on cigarette advertising, a major source of subsidy was removed from antismoking campaigns and they became a much less common sight on television. Per capita cigarette consumption began to increase again. The correlation between cigarette consumption trends and antismoking campaigns on television is provocative, but Foote's interpretation of this relationship is open to debate.

Economic Pressures and Smoking

Russell (72), in a regression analysis study of the relationship between cigarette costs and cigarette consumption, concluded that the smoking by British males was very sensitive to price changes. Such analyses are necessarily complex and, depending on the particular years considered, the correlations between cigarette consumption and cost ranged from -.52 to -.92. Another econometric analysis has challenged Russell's conclusions and suggests that males are relatively unresponsive to

price changes and that females are relatively responsive to them (4). Discussing both of the above projects and presenting a new analysis of British data, Peto (67) concluded that male cigarette consumption between 1951 and 1970 did show marked responsiveness to price changes. Schachter (81) has also argued that cigarette cost can have an influence on the composition of the ranks of smokers.

Economists have developed the concept of "elasticity" to refer to the demand for a product as a function of price. The elasticity of product demand is the percent change in consumption that results from a 1 percent price change. Russell's elasticity estimates for cigarettes indicate that for every 1 percent rise in price estimates, consumption fell by .6 percent. According to usual standards, this shows that cigarette demand is relatively inelastic.

Cross-cultural Perspectives

Damon (20) has studied the use of tobacco in seven preliterate or primitive societies, four in the Solomon Islands, Melanesia, and three in sub-Saharan Africa. All seven of the societies had access to locally grown tobacco, as well as cured tobacco. Damon was especially interested in evaluating social reasons for smoking. He found that, unless forbidden by religion, all adults smoked as much as possible. Four of the Melanesian tribes and one African tribe did not "report or recognize social factors as a major stimulus or support for smoking." Their dominant motive was personal gratification. Damon argues that physiological satisfaction is the major controlling influence on smoking in these five groups, even though each is aware that smoking is bad for health. The primacy of physiological factors is further supported by (1) the rapid adoption of smoking once it is introduced, (2) its widespread use unless forbidden by religion, and (3) the frequent inability of smokers to go without tobacco for even a few days. Two African tribes did recognize some social uses of tobacco, in addition to the underlying motive of physiological satisfaction. One of these groups, the Bushmen, had incorporated tobacco-smoking into some of their important social rituals. Damon concludes: "On the whole, among these seven societies personal gratification is much stronger than social influence in maintaining the smoking habit."

Personal gratification is often not considered a socially acceptable motive for drug use in the United States (10) and probably in many other Western industrialized cultures. The so-called Protestant work ethic is harsh toward such hedonistic motives and is likely to be much milder toward social motives. Perhaps we in industrialized cultures may have cultural "blindness" to the physiological pleasures of smoking and a special cultural need to emphasize social uses of smoking, although recent scientific research on smoking has been moving away from the long-defended notion that cigarettes produce only a psychological dependence and toward the idea that they produce a

physiological dependence (75, 82). Conversely, perhaps some of the primitive groups have been biased against recognizing the social uses of tobacco and culturally predisposed to acknowledge the physiological pleasures of smoking.

Recommendations for Future Research

Specific recommendations about future research were made at a few points in this selective review of the literature, but several general points which echo the advice of other authorities (19, 22, 49, 68) should be stated. There are multiple psychosocial influences on cigarette smoking. Multivariate research is needed—with as many as possible of the known factors measured within any one project. Only multivariate research can begin to deal with the problems of substantial intercorrelations and interactions among predictor variables. Large samples are needed for reliable multivariate work. Life-span longitudinal projects are much more valuable than one-shot cross-sectional studies. The small amount of longitudinal data already gathered has given us our most unambiguous and interesting information about psychosocial influences on smoking.

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